Single Tower Trigger Logic

Level 1 **Level 2**

Trigger "T"
(3-in-a-row)

Rate control command 1

regular mode

Controlled mode

Is there a hit in any Nearest Neighbor ACD tile?

NO

YES

End branch

OR

ACD "Low" Nearest Neighbor set hit

Is there a "T" trigger? [1]

NO

YES

End branch

Controlled mode

OR

Calorimeter Trigger **Low**

Rate control command 2
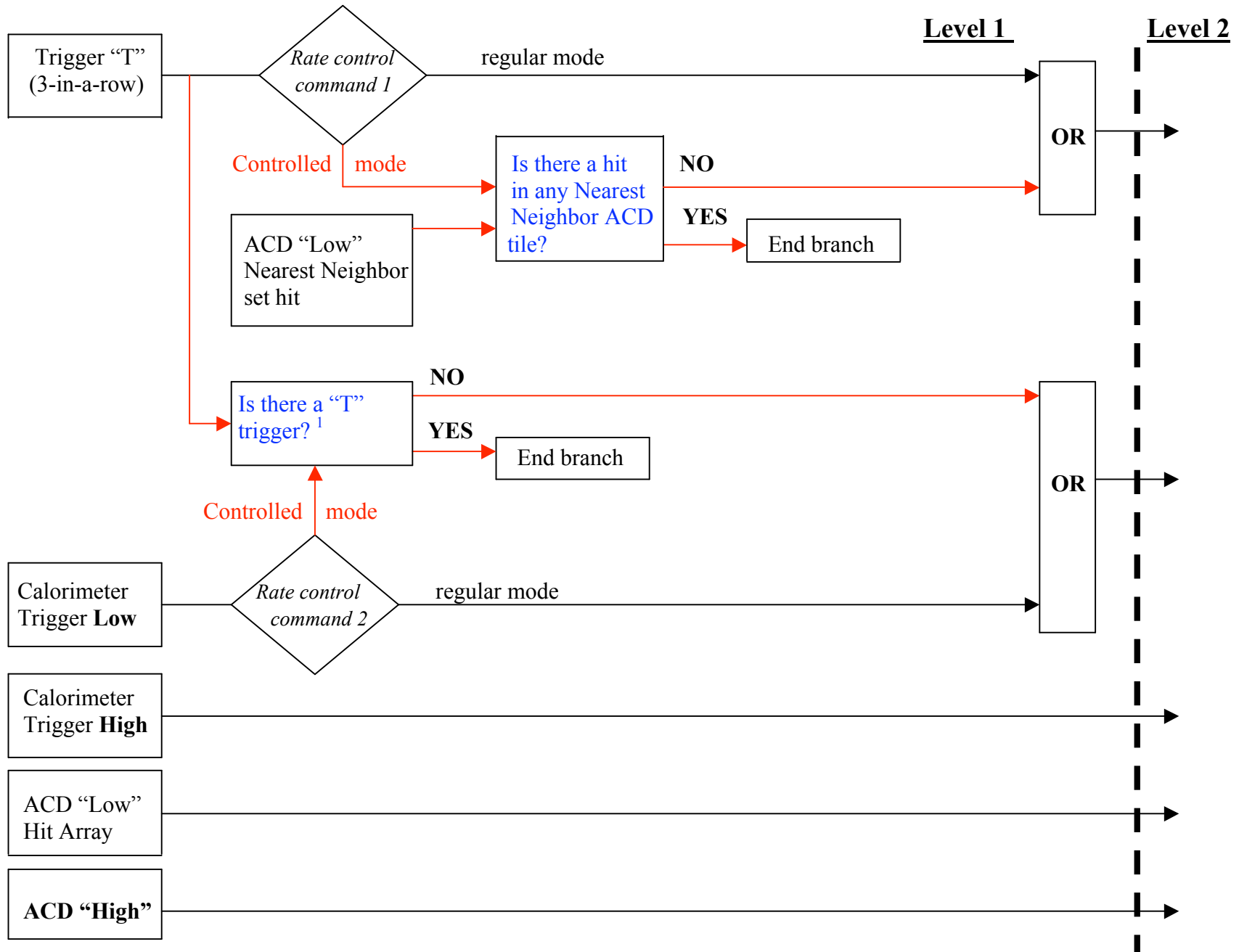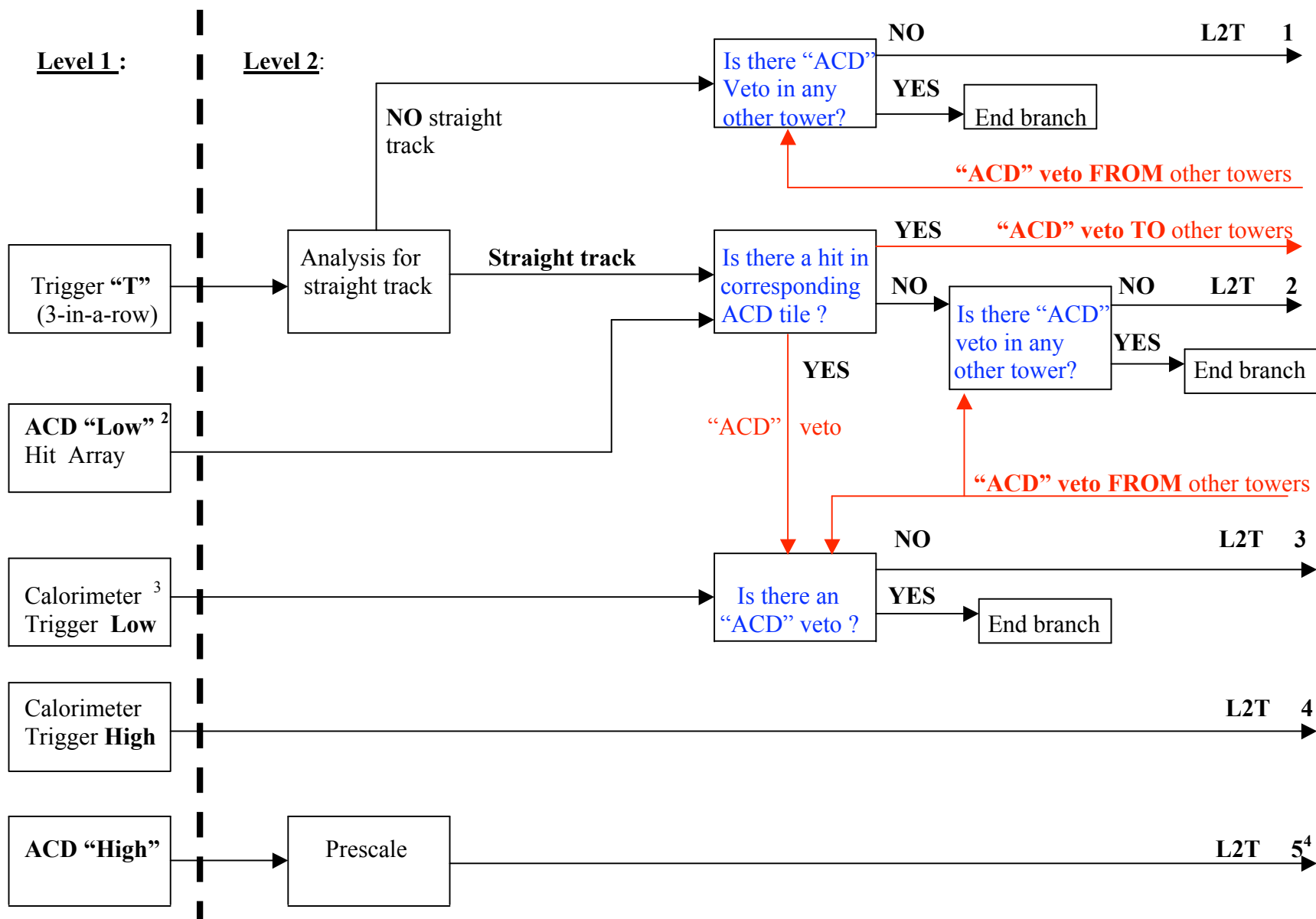
regular mode

Calorimeter Trigger **High**

ACD "Low" Hit Array

ACD "High"

[1] There will be a loss of redundancy for the tracker-calorimeter cross check, but we want to keep "calorimeter only" events.

Level 1 :

Level 2:

Trigger **"T"** (3-in-a-row)

Analysis for straight track

NO straight track

Straight track

Is there "ACD" Veto in any other tower?

NO → L2T 1

YES → End branch

"ACD" veto FROM other towers

Is there a hit in corresponding ACD tile ?

YES → **"ACD" veto TO** other towers

NO → Is there "ACD" veto in any other tower?

NO → L2T 2

YES → End branch

YES

"ACD" veto

"ACD" veto FROM other towers

ACD "Low" [2] Hit Array

Calorimeter Trigger **Low** [3]

Is there an "ACD" veto ?

NO → L2T 3

YES → End branch

Calorimeter Trigger **High**

→ L2T 4

ACD "High"

Prescale

→ L2T 5 [4]

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[2] An ACD Tile sends an ACD "Low" if and only if the tile fired a low level discriminator but not the high Z level.

[3] More than 100 MeV in a single crystal but does not fire the high level discriminator

[4] If all L2T bits are false, master reset